Claims

1. A liquid crystal material, comprising at least one negative-type mesogen comprising at least one soluble, dipolar dopant.

2. A liquid crystal material according to claim 1, wherein the dopant is organic and comprises at least one fluorinated group and/or at least one cyano end group.

3. A liquid crystal material according to claim 1 or 2, wherein the negative-type mesogen is selected from the group comprising MLC-2038, MLC-6608, MLC-6609 and MLC-6610.

4. A liquid crystal material according to any of claims 1 to 3, wherein the dopant is present in an amount of between about 0.01 to about 10wt% of the mixture.

5. A liquid crystal material according to any of claims 1 to 4, wherein the dopant is present in an amount of between about 0.05 to about 5wt% of the mixture.

6. A liquid crystal material according to any of claims 1 to 5, wherein the dopant is present in an amount of about 0.1 to about 1.5wt% of the mixture.

7. A liquid crystal material according to any of claims 1 to 6, wherein the dopant is selected from the group consisting of FMor2, J6, J6a, J10B, J21, 5DCNQ1 and 13FPHPIP.

8. A liquid crystal cell or a negative-type liquid crystal display, comprising a liquid crystal material according to any of claims 1 to 7.

9. A method of producing a liquid crystal material, comprising mixing at least one negative-type mesogen with a soluble, dipolar dopant.

10. A method according to claim 9, wherein the dopant is organic and comprises at least one fluorinated group and/or at least one cyano end group.

11. A method according to claim 9 or 10, wherein the negative-type mesogen is selected from the group comprising MLC-2038, MLC-6608, MLC-6609 and MLC-6610.

12. A method according to any of claims 9 to 11, wherein the dopant is admixed in an amount of between about 0.01 to about 10wt% of the final mixture.

13. A method according to any of claims 9 to 12, wherein the dopant is admixed in an amount of between about 0.05 to about 5wt% of the final mixture.

14. A method according to any of claims 9 to 13, wherein the dopant is admixed in an amount of about 0.1 to about 1.5wt% of the final mixture.

15. A method according to any of claims 9 to 14, wherein the dopant is selected from the group consisting of FMor2, J6, J6a, J10B, J21, 5DCNQ1 and 13FPHPIP.

16. A method of producing liquid crystal cells or negative-type crystal displays according to claim 8 comprising the steps of a) mixing at least one negative-type mesogen and about 0.01 to about 10wt% of at least one soluble, dipolar dopant, b) centrifuging the mixture, c) filling cells with the mixture and, d) annealing the filled cells.

17. A method of improving the response times, homogenous on-state alignments and contrast of a negative-type liquid crystal material without degrading the off-state, comprising adding at least one soluble, dipolar dopant to said liquid crystal material.

18. A method according to claim 17, wherein the dopant is organic and comprises at least one fluorinated group and/or at least one cyano end group.

19. A method according to claim 17 or 18, wherein the dopant is added in an amount of between about 0.01 to about 10wt% of the negative-type liquid crystal material.

20. A method according to any of claims 17 to 19, wherein the dopant is admixed in an amount of between about 0.05 to about 5wt% of the negative-type liquid crystal material.

21. A method according to any of claims 17 to 20, wherein the dopant is admixed in an amount of about 0.1 to about 1.5wt% of the negative-type liquid crystal material.

22. A method according to any of claims 17 to 21, wherein the dopant is selected from the group consisting of FMor2, J6, J6a, J10B, J21, 5DCNQ1 and 13FPHPIP.

23. Use of a liquid crystal material according to any of claims 1 to 7 in an improved LC-material for display applications.